

## **REMARKS**

Claims 58-79 are pending as amended in the RCE of 6/5/07. The numbering of claims has been corrected to include missing claim number 72. The independent claims have been amended to clarify the invention by specifying the nature of the potting process employed herein – which occurs without damage to the fibers or collapse of the hollow fiber membrane lumen. See, the Summary of the Invention – page 4, lines 5-10 of the original PCT Specification.

### **Double Patenting Rejections**

Claims 76-78 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 37-48 of copending Application No. 10/704,468; and the pending claims of Application 09/890,290. In view of the amendments made herein, reconsideration and withdrawal of this double patenting rejection is respectfully requested. The claims are now believed to be patentably distinct over the claims of the cited applications.

Claims 58-79 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the claims of U.S. 6,663,745 and US 6,582,496. In view of the amendments made herein, reconsideration and withdrawal of this double patenting rejection is respectfully requested. The claims are now believed to be patentably distinct over the claims of the cited patents.

Claims 57-79 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the pending claims of copending Application No. 10/489,214. In view of the amendments made herein, reconsideration and withdrawal of this double patenting rejection is respectfully

requested. The claims are now believed to be patentably distinct over the claims of the cited application.

#### Claim Rejections - 35 USC § 102

Claims 76-78 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over EP 0 299 459 A2. This rejection is respectfully traversed.

EP 459 is the EPO version of the Muto Patent cited below – US 5,066,397 – and the teachings are the same in each. Muto teaches several methods for achieving “fusion bonding” of porous hollow fiber filter membranes into a unified terminal block at one or both ends of a plurality of such fibers. The term "fusion" as used by Muto means to bring a material into a viscous state or a state where the solid phase and the liquid phase are in equilibrium.

In other words, Muto **purposely melts the side walls** of the porous hollow fiber to create the desired fusion bond; which can either be fiber to fiber or include another bonding material between the melted fiber walls. In Muto, the fiber walls become one with the potting material. In the present invention, the fiber walls remain distinct from the potting material. The materials are thus physically different.

The invention defined in the rejected claims does not include any such fusion bonding and as such, the Muto patent fails to anticipate the claims. Likewise, nothing in EP 459 teaches or suggests the presently claimed process, in which **complete encapsulation and sealing of the fibers by the potting resin takes place without damage to the fibers or collapse of the hollow fiber membrane lumen.**

In other words, in the present invention, the perfluorinated hollow fibers retain their integrity and the potting material is used merely to create an integral seal with each such fiber. There is no teaching or suggestion in the present specification to create a fusion bond as required by EP 549. Accordingly, the Section 102/103 rejection of Claims 76-78 citing EP 549 should be reconsidered and withdrawn. Such action is respectfully requested.

Claims 76-78 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. 103(a) as being obvious over, JP 4-354521. This rejection is respectfully traversed.

The Japanese Patent Publication 521 teaches PTFE thermoplastic hollow fibers bonded by a potting resin selected from PTFE, PFA, FEP, wherein the preferred sealant resin is either PFA or FEP. As taught in the Examples, during the potting process FEP was heated to 300°C and PFA was heated to 315°C. The melting point of the PTFE hollow fibers is not taught – but conventional PTFE has a melting point of about 321°C.

Nothing in this document teaches or suggests the method claimed herein – which requires two heating steps as recited in Claim 58, which provides the product defined by the rejected claims – in which the potting process is accomplished without damage to the fibers or collapse of the hollow fiber membrane lumen. Accordingly, the Section 102/103 rejection of Claims 76-78 citing this Japanese Patent Publication 521 should be reconsidered and withdrawn. Such action is respectfully requested.

Claim Rejections - 35 U.S.C. § 103

Claims 58-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yagihashi et al (US 5,885,454), EP 0299459 A2, JP'521, Huang et al (US 5,284,584), and/or Muto et al (US 5,066,397). This rejection is respectfully traversed.

Yagihashi teaches hollow fibers made from a list of materials - polyolefin such as polypropylene, polyvinyl chloride, polyamide, polyester resin, polysulfone, polyether sulfone, polyetherether ketone, or fluorine-containing resin such as polyvinylidene fluoride (PVDF) or polytetrafluoro ethylene (PTFE). Only the PTFE material is relevant herein, for which the preferred sealant resin is either PFA or FEP. Thus, the teachings of Yagihashi are very similar to those of JP 4-354521, and no more relevant than that reference is.

EP 459 (Muto) is the same as Muto 397. These references have been distinguished from the present invention above. Muto melts the outer wall of the porous hollow fiber to create the desired fusion bond with the potting material. This process is not claimed herein, since, as recited in the claims, complete encapsulation and sealing of the fibers by the potting resin must take place without damage to the fibers or collapse of the hollow fiber membrane lumen.

Huang teaches a method of making a hollow fiber cartridge by making a bundle by laying parallel hollow fiber layers and laying a strip of the potting material in the molten form. In discussing the preferred polyolefin potting resin, this patent teaches that:

The solvent resistant resin need not be directly employed to fabricate a spirally-wound, cylindrically-shaped membrane bundle: following extrusion, the molten band of resin can be allowed to solidify, and subsequently can be re-heated by any

suitable means restoring it to a molten state while retaining its desired shape, and then directed onto the fabric to produce a tube sheet.

This teaching is not a second heating step as claimed herein. It is instead, a recognition that during the Huang process conditions, there may be a need to pause the extrusion and then restart the process – nothing more. This is a very narrow teaching, limited to the specific preferred embodiment being discussed in the patent. It is irrelevant to the presently claimed process.

Applicant submits that due to the differences between the teachings of the proposed combination of Yagihashi Muto (EP), JP 521, Huang, and/or Muto (US) and the presently claimed invention, the art, when considered as a whole, fails to make the presently claimed process (and product by process) obvious. Following the teachings of the KSR case:

“a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR v. Teleflex*, 550 U.S. \_\_\_\_ (2007) at page 14. The goal of *KSR* is to determine whether there “was an apparent reason to combine the known element ***in the fashion claimed*** by the [application] at issue.” [Emphasis added].

Reconsideration and withdrawal of the Section 103(a) rejection of Claims 58-79 citing Yagihashi Muto (EP), JP 521, Huang, and/or Muto (US) is respectfully requested.

### **EXTENSION OF TIME REQUEST**

Applicant respectfully requests a three month extension of time for the filing of this response. The original deadline was January 16, 2008. This response is being filed

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on or before April 16, 2008.

### **FEE AUTHORIZATION**

Please charge all fees (time extension, claim fees, etc.) due in connection with this filing to Deposit Account No. 19-0733.

Respectfully submitted,

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